



CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

Purpose Permit number:	CPS 9562/1
Permit Holder:	Rivenleigh Pty Ltd
Duration of Permit:	From 14 April 2022 to 14 April 2027

The permit holder is authorised to clear *native vegetation* subject to the following conditions of this permit.

PART I – CLEARING AUTHORISED

1. Clearing authorised (purpose)

The permit holder is authorised to clear *native vegetation* for the purpose of facilitating an underground power connection by Western Power.

2. Land on which clearing is to be done

Lucy Road Reserve (PIN 11471102), North Jindong

3. Clearing authorised

The permit holder must not clear more than 0.0024 hectares of *native vegetation* within the area cross-hatched yellow in Figure 1 of Schedule 1.

PART II – MANAGEMENT CONDITIONS

4. Avoid, minimise, and reduce impacts and extent of clearing

In determining the *native vegetation* authorised to be cleared under this permit, the permit holder must apply the following principles, set out in descending order of preference:

- avoid the clearing of *native vegetation*;
- minimise the amount of *native vegetation* to be cleared; and
- reduce the impact of clearing on any environmental value.

5. Weed and dieback management

When undertaking any clearing authorised under this permit, the permit holder must take the following measures to minimise the risk of introduction and spread of *weeds* and *dieback*:

- (a) clean earth-moving machinery of soil and vegetation prior to entering and leaving the area to be cleared;
- (b) ensure that no known *dieback* or *weed*-affected soil, *mulch*, *fill*, or other material is brought into the area to be cleared; and
- (c) restrict the movement of machines and other vehicles to the limits of the areas to be cleared.

6. Revegetation and Rehabilitation (temporary works)

The permit holder must:

- (a) retain the vegetative material (seed stock if present) and topsoil removed by clearing authorised under this permit and stockpile the vegetative material and topsoil in an area that has already been cleared;
- (b) within six months following clearing authorised under this permit, *revegetate* and *rehabilitate* the areas that are no longer required for facilitating underground power by:
 - (i) re-shaping the surface of the land so that it is consistent with the surrounding five metres of uncleared land;
 - (ii) ripping the ground on the contour to remove soil compaction;
 - (iii) laying the vegetative material and topsoil retained under condition 6(a) on the cleared areas; and
 - (iv) undertake weed control activities on an ‘as needed’ basis to reduce weed cover within the cleared areas to no greater than the weed cover within the surrounding five metres of uncleared land.

PART III - RECORD KEEPING AND REPORTING

7. Records that must be kept

The permit holder must maintain records relating to the listed relevant matters in accordance with the specifications detailed in Table 1.

Table 1: Records that must be kept

No.	Relevant matter	Specifications
1.	In relation to the authorised clearing activities generally	<ul style="list-style-type: none"> (a) the species composition, structure, and density of the cleared areas; (b) the location where the clearing occurred, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings; (c) the date that the area was cleared; (d) the size of the area cleared (in hectares); (e) actions taken to avoid, minimise, and reduce the impacts and extent of clearing in accordance with condition 4; and (f) actions taken to minimise the risk of the introduction and spread of <i>weeds</i> and

No.	Relevant matter	Specifications
		<i>dieback</i> in accordance with condition 5.
2.	In relation to <i>revegetation</i> and <i>rehabilitation</i> of areas pursuant to condition	<p>(a) The location of any areas <i>revegetated</i> and <i>rehabilitated</i>, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings or decimal degrees;</p> <p>(b) a description of the <i>revegetated</i> and <i>rehabilitated</i> activities undertaken;</p> <p>(c) the date(s) that the area was <i>revegetated</i> <i>rehabilitated</i>.</p> <p>(d) the size of the area <i>revegetated</i> and <i>rehabilitated</i> (in hectares);</p> <p>(e) any <i>weed</i> control activities undertaken within the area <i>revegetated</i> and <i>rehabilitated</i>.</p>

8. Reporting

The permit holder must provide to the *CEO* the records required under condition 7 of this permit when requested by the *CEO*.

DEFINITIONS

In this permit, the terms in Table have the meanings defined.

Table 2: Definitions

Term	Definition
CEO	Chief Executive Officer of the department responsible for the administration of the clearing provisions under the <i>Environmental Protection Act 1986</i> .
clearing	has the meaning given under section 3(1) of the EP Act.
condition	a condition to which this clearing permit is subject under section 51H of the EP Act.
dieback	means the effect of <i>Phytophthora</i> species on native vegetation.
department	means the department established under section 35 of the <i>Public Sector Management Act 1994</i> (WA) and designated as responsible for the administration of the EP Act, which includes Part V Division 3.
EP Act	<i>Environmental Protection Act 1986</i> (WA)
fill	means material used to increase the ground level, or to fill a depression.
mulch	means the use of organic matter, wood chips or rocks to slow the movement of water across the soil surface and to reduce evaporation.
native vegetation	has the meaning given under section 3(1) and section 51A of the EP Act.
rehabilitate/ed/ion	rehabilitate/ed/ion means actively managing an area containing native vegetation in order to improve the ecological function of that area.

Term	Definition
weeds	means any plant – (a) that is a declared pest under section 22 of the <i>Biosecurity and Agriculture Management Act 2007</i> ; or (b) published in a Department of Biodiversity, Conservation and Attractions species-led ecological impact and invasiveness ranking summary, regardless of ranking; or (c) not indigenous to the area concerned.

END OF CONDITIONS



Mathew Gannaway
MANAGER
NATIVE VEGETATION REGULATION

*Officer delegated under Section 20
of the Environmental Protection Act 1986*

21 March 2022

Schedule 1

Plan 9562/1

The boundary of the area authorised to be cleared is shown in the map below (Figure 1).

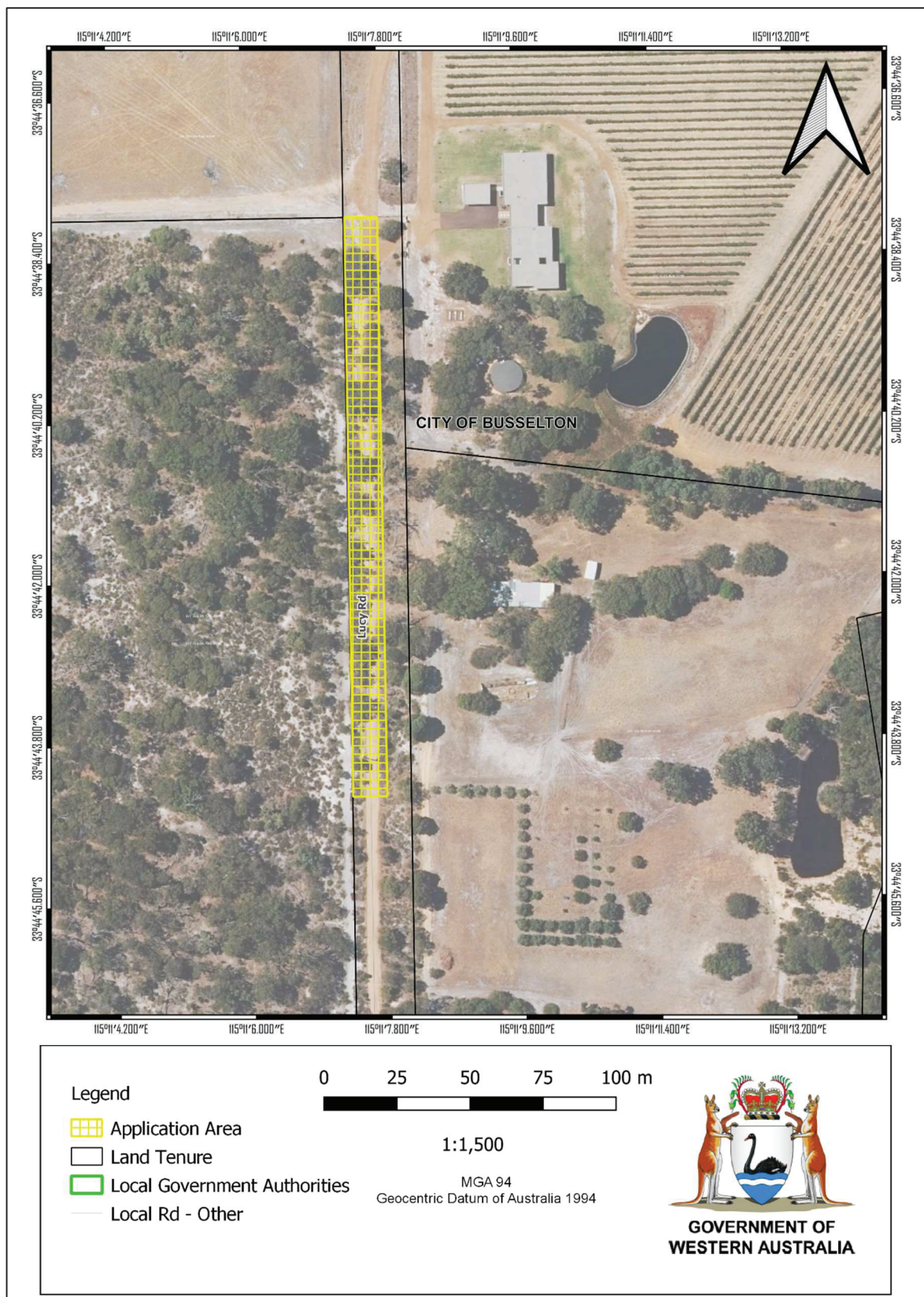


Figure 1: Map of the boundary of the area within which clearing may occur



Clearing Permit Decision Report

1 Application details and outcome

1.1. Permit application details

Permit number:	CPS 9562/1
Permit type:	Purpose permit
Applicant name:	Rivenleigh Pty Ltd
Application received:	05 January 2022
Application area:	0.0024 hectares within a 0.115 hectares footprint
Purpose of clearing:	Facilitate underground power connection by Western Power
Method of clearing:	Positioning of boring machine on Lucy Road Reserve
Property:	Lucy Road Reserve (PIN 11471102)
Location (LGA area/s):	Shire of Busselton
Localities (suburb/s):	North Jindong

1.2. Description of clearing activities

The vegetation proposed to be cleared is contained within a single contiguous area (see Figure 1, Section 1.5).

The proposed clearing is to facilitate underground power by positioning a boring machine in two locations within the larger application area of 0.115 hectares (Appendix E). Rivenleigh Pty Ltd (Rivenleigh) has advised the Department of Water and Environmental Regulations (DWER) that this proposal will not involve direct clearing of native vegetation and the positioning of the boring machine may lead to killing or destruction of some native vegetation. The proposed areas of clearing as provided by Western Power (on behalf of Rivenleigh) is illustrated in Appendix E. The proposed clearing is temporary (Rivenleigh, 2021).

1.3. Decision on application

Decision:	Granted
Decision date:	21 March 2022
Decision area:	0.0024 hectares of native vegetation within a 0.115 hectare footprint, as depicted in Section 1.5, below.

1.4. Reasons for decision

This clearing permit application was submitted, accepted, assessed and determined in accordance with sections 51E and 51O of the *Environmental Protection Act 1986* (EP Act). DWER advertised the application for 21 days and no submissions were received.

In making this decision, the Delegated Officer had regard for the site characteristics (see Appendix B), relevant datasets (see Appendix F.1), the clearing principles set out in Schedule 5 of the EP Act (see B.5), relevant planning instruments and any other matters considered relevant to the assessment (see Section 3). The Delegated Officer

also took into consideration the purpose of the clearing is to provide electricity to a building completed over a year ago.

The assessment identified that the proposed clearing will result in:

- the potential introduction and spread of weeds and dieback into adjacent vegetation, which could impact on the quality of the adjacent vegetation and its habitat values.

After consideration of the available information, as well as the applicant's minimisation and mitigation measures (see Section 3.1), the Delegated Officer determined the proposed clearing is unlikely to lead to appreciable land degradation and have long-term adverse impacts on environmental values.

The Delegated Officer decided to grant a clearing permit subject to conditions to:

- avoid, minimise to reduce the impacts and extent of clearing.
- take hygiene steps to minimise the risk of the introduction and spread of weeds and dieback.
- rehabilitation of the temporary cleared areas.

1.5. Site map

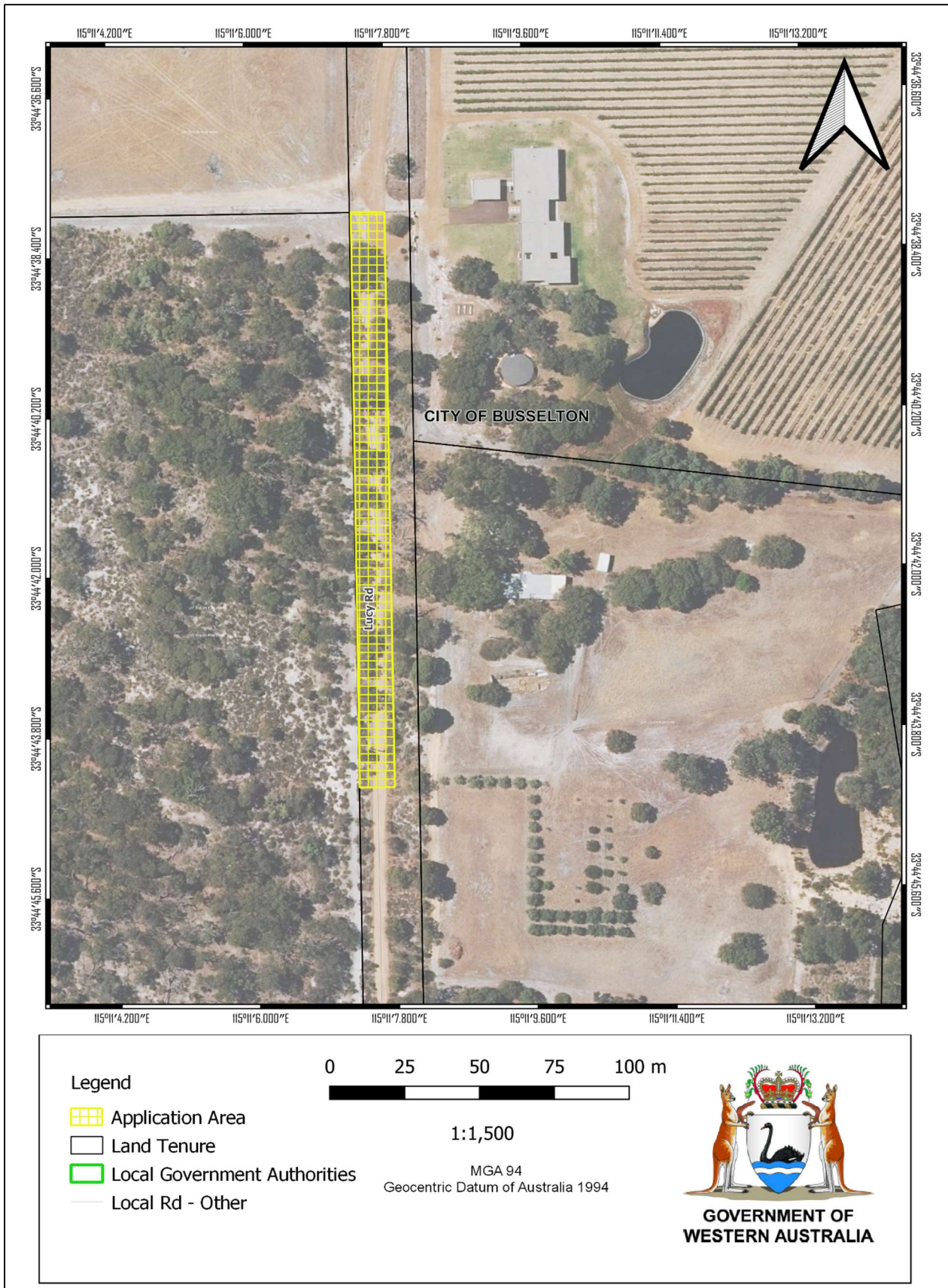


Figure 1 Map of the application area

The area crosshatched yellow indicates the area authorised to be cleared under the granted clearing permit

2 Legislative context

The clearing of native vegetation in Western Australia is regulated under the EP Act and the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004* (Clearing Regulations).

In addition to the matters considered in accordance with section 51O of the EP Act (see Section 1.4), the Delegated Officer has also had regard to the objects and principles under section 4A of the EP Act, particularly:

- the precautionary principle
- the principle of intergenerational equity
- the principle of the conservation of biological diversity and ecological integrity.

Other legislation of relevance for this assessment include:

- *Biodiversity Conservation Act 2016* (WA) (BC Act)
- *Conservation and Land Management Act 1984* (WA) (CALM Act)
- *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act)

The key guidance documents which inform this assessment are:

- *A guide to the assessment of applications to clear native vegetation* (DER, December 2013)
- *Procedure: Native vegetation clearing permits* (DWER, October 2019)

3 Detailed assessment of application

3.1. Avoidance and mitigation measures

Rivenleigh has advised DWER that the boring machine will be sited by Western Power in two locations (see Appendix E). Rivenleigh further advised DWER that the proposed clearing will not involve direct removal of native vegetation or cause damage to any upper storey trees, and the proposal is temporary clearing (Rivenleigh, 2021a).

The Delegated Officer was satisfied that the applicant has made a reasonable effort to avoid and minimise potential impacts of the proposed clearing on environmental values.

3.2. Assessment of impacts on environmental values

In assessing the application, the Delegated Officer has had regard for the site characteristics (see Appendix B) and the extent to which the impacts of the proposed clearing present a risk to biological, conservation, or land and water resource values.

The assessment against the clearing principles (see B.5) identified the impacts of the proposed clearing are limited and able to be managed to be environmentally acceptable with standard management conditions.

3.2.1. Biological values - Clearing Principles (a and b)

Assessment

The application area is located over the beard vegetation association (1181) which is described as *Eucalyptus marginata* (Jarrah), *Corymbia calophylla* (Marri) and *Eucalyptus wandoo* (wandoo) (Shepherd et al, 2001). Approximately 60 per cent of the application area (northern area of the proposed footprint) is located within the Abba Vegetation Complex (30) of the Swan Coastal Plain described broadly as a mixture of open forest of *Corymbia calophylla* (Marri) - *Eucalyptus marginata* (Jarrah), *Banksia* species and woodland of *Corymbia calophylla* (Marri) with minor occurrences of *Corymbia haematoxylon* (Mountain marri), woodland of *Eucalyptus rudis* (Flooded Gum) and melaleuca species along creeks and on flood plains (Webb et al, 2016). Approximately 40 per cent of the application area (southern area of the application area) falls within the Yelverton Vegetation complex (314) of the southwest Whicher Scarp, which is described as woodland of *Allocasuarina fraseriana*, *Eucalyptus marginata* subsp. *marginata*, *Xylomelum occidentale* and *Banksia attenuata* on sandy slopes in the humid zone (Webb et al, 2016).

The photographs provided by the applicant indicate that the vegetation within the areas proposed to station the boring machine is in a Good to Very Good (Keighery, 1994) condition (Rivenleigh, 2021).

No conservation significant ecological communities are mapped over the application area. The priority one Priority Ecological Community (PEC) - West Whicher Scarp *Banksia attenuata* woodland (Swan Coastal Plain centred woodlands of grey/white sands community B2) and the Priority three PEC - *Banksia* Dominated Woodlands of the Swan Coastal Plain IBRA Region are mapped immediately adjacent to the application area. *Banksia* Dominated Woodlands of the Swan Coastal Plain is listed as Endangered under the EPBC Act. According to the photographs provided by the applicant (Rivenleigh, 2021) and considering the very small area of proposed clearing, it is unlikely

that the areas proposed for locating the boring machine will contain species representative of the above conservation significant ecological communities.

Flora

Forty-Seven (47) Conservation significant flora species were identified within the ten-kilometre radius local area which include 12 threatened flora species and 35 priority flora species. The closest record of the flora species was *Calothamnus quadrifidus* subsp. *teretifolius*, identified one kilometre from the application area. The proposed clearing area is not likely to comprise significant habitat for 46 of the known taxa from the local area. Majority of the records within the local area were mapped over either geomorphic wetlands within the Swan Coastal Plain, unreviewed geomorphic wetlands of the Southwest, timber reserves, Yelverton National Park or the blackwood state forest which occur within the ten-kilometre radius local area. Multiple records of threatened species, *Daviesia elongate* and *Caladenia procera* were recorded within a DBCA recreation reserve located approximately 4.7 kilometres to the north of the application area. The proposed clearing areas are not within any of the above-mentioned landforms.

The photographs provided by the applicant illustrate the presence of *Allocasuarina fraseriana* trees in close proximity to the proposed locations of the boring machine (Rivenleigh, 2021). Casuarina forests can produce deep layers of Casuarina 'needles' that can limit the growth of shrubs and ground layer species (DotEE, 2017). Noting this, and photo of the proposed location of the boring machine (Rivenleigh, 2021), the likelihood of priority and threatened flora occurring in the vicinity of the *Allocasuarina fraseriana* trees is unlikely.

During the desktop analysis, the species *Drakaea micrantha* was identified as having a likelihood of occurrence over the application area. *Drakaea micrantha* is a threatened flora species and occurs over white-grey sand. *Drakaea micrantha* is associated with *Banksia* spp., jarrah and *Allocasuarina fraseriana* woodland or forests, often found under thickets of *Kunzea* spp., *Paracaleana* spp., and other *Drakaea* spp. (WA Herbarium, 1998). The closest known location of this taxa is located approximately two kilometres from the application area. Given the very small area and the nature of the proposed clearing (incidental from the boring machine), the risk of impact to *Drakaea micrantha* is low.

Weeds have the potential to out-compete native flora and reduce the biodiversity of an area. Potential impacts to biodiversity as a result of the introduction and spread of weeds and dieback may be minimised by the implementation of a weed and dieback management condition.

Conclusion

Given the small size of the native vegetation clearing (0.0024 hectares) in relation to its position in the landscape (edge of the Lucy Road) (Rivenleigh, 2022) and the habitat preferences of the identified flora species (WA Herbarium, 1998), it is unlikely that significant flora species known from the local area will be impacted from the positionings of the boring machine. The permit holder is also required to keep the seed store from the proposed clearing areas (if present) for post rehabilitation to avoid any long term impacts to native vegetation.

Conditions

To address the above impacts, the following management measures will be required as conditions on the clearing permit:

- The permit holder is required to rehabilitate post clearing.
- The permit holder is required to take hygiene steps to minimise the risk of the introduction and spread of weeds and dieback.

3.2.2. Significant remnant vegetation - Clearing Principles (e)

Assessment

The national objectives and targets for biodiversity conservation in Australia has a target to prevent clearance of ecological communities with an extent below 30 per cent of that present pre-1750, below which species loss appears to accelerate exponentially at an ecosystem level (Commonwealth of Australia, 2001). The application area is located within the Swan Coastal Plain Interim Biogeographic Regionalisation of Australia bioregion, which retains approximately 38 per cent of its pre-European vegetation extent (Government of Western Australia, 2019b).

The mapped Swan Coastal Plain vegetation 'Abba complex' retains approximately 6.54 per cent of its pre-European native vegetation extent within the bioregion (Government of Western Australia, 2019a). The Southwest Yalverton system retains approximately 55.71 per cent of the original native vegetation (Government of Western Australia 2019a). The extent of native vegetation remaining within the local area is 20.90 per cent.

The Abba vegetation complex (33) and native vegetation remaining within the local area both retains less than 30 per cent of the original extent of native vegetation. Noting the local area and the mapped Abba vegetation complex

is less than the 30 per cent threshold, the application area is considered to be within an extensively cleared landscape.

The areas proposed for positioning of the boring machine does not comprise of the species representative of the Abba vegetation complex therefore, the proposed clearing will not likely have an impact on the remaining extent of the Abba vegetation complex.

Given the nature of the proposal and the very small area of native vegetation to be disturbed (0.0024), the proposed clearing is not considered to be a significant remnant within an area that has been extensively cleared.

Conclusion

Noting the above, the proposed clearing is not likely to be significant as a remnant of native vegetation in an extensively cleared landscape.

Conditions

Nil conditions required to manage this environmental value.

3.3. Relevant planning instruments and other matters

The City of Busselton advised DWER that local government approvals are not required. The City has submitted a number of comments in relation to the proposal to clear native vegetation to facilitate installation of power along Lucy Road. The City of Busselton requested that Western Power minimise the amount of clearing and disturbing by;

- “Only clearing that is necessary to make the underground trench.
- Stockpiling separately the organic layer and topsoil, and replacing it to the soil surface as the trench is filled in.
- Boring under mature trees.
- Placing spoil on Lucy Road (unmade road surface), but along the side, so as not to prevent vehicle movement along the road.
- Preventing all vehicles subsidiary to trenching from parking/driving on vegetation along the road.
- Having traffic management to facilitate traffic movement along the road while works underway.”

The application area is located within the Capel-Busselton groundwater area proclaimed under the *Rights in Water and Irrigation Act 1914* (RiWI Act) (DWER-034). Applicant does not require a groundwater licence as there is no intention to abstract groundwater for the purpose of clearing. The application area is not located within a surface water area or Irrigation district proclaimed under the RiWI Act (DWER-034) nor does it fall within a public water source (DWER-033), or a clearing control catchment protected under the *Country Areas Water Supply Act 1947* (CAWS Act).

No Aboriginal sites of significance have been mapped within the application area. However, it is the permit holder's responsibility to comply with the *Aboriginal Heritage Act 1972* (WA) and ensure that no Aboriginal Sites of Significance are damaged through the clearing process.

End

Appendix A. Additional information provided by applicant

Summary of comments	Consideration of comment
Photographs (Rivenleigh, 2021)	Photographs of the proposed clearing areas where the boring machines will be located within the larger footprint (Rivenleigh, 2021).

Appendix B. Site characteristics

B.1. Site characteristics

The information provided below describes the key characteristics of the area proposed to be cleared and is based on the best information available to DWER at the time of the assessment. This information was used to inform the assessment of the clearing against the Clearing Principals, contained in Appendix C.

Characteristic	Details
Local context	<p>The area proposed to be cleared is a very small area of native vegetation located within a larger footprint along the Lucy Road Reserve within the extensive land use zone of Western Australia. The application area is surrounded by West Whicher Scarp <i>Banksia attenuata</i> woodland and located in the Southern Swan Coastal Plain between the Capel River and Dunsborough.</p> <p>Aerial imagery and Spatial data indicate the local area (ten-kilometre radius from the centre of the area proposed to be cleared) retains approximately 20.90 per cent of the original native vegetation cover.</p>
Ecological linkage	No formal ecological linkages are mapped within the application area, and it is unlikely the proposed clearing will provide a linkage between native vegetation.
Conservation areas	<p>There are several conservation areas within the local area. The closest conservation area is a DBCA land of interest (DBCA-012), located approximately 1.3 kilometres southeast of the application area.</p> <p>The application area is not within a conservation covenant, regional park or DBCA areas of interest (DBCA-012, DBCA-026).</p>
Vegetation description	<p>Representative photos of the proposed clearing areas supplied by the applicant (Rivenleigh, 2021) are available in Appendix E.</p> <p>The mapped vegetation types over the application area:</p> <ul style="list-style-type: none"> • Beard vegetation association (1181), which is described as <i>Eucalyptus marginata</i>, <i>Corymbia calophylla</i> and <i>Eucalyptus wandoo</i> (Shepherd et al, 2001). • Abba vegetation complex (30), which is described as a mixture of open forest of <i>Corymbia calophylla</i>, <i>Eucalyptus marginata</i> (Jarrah) - <i>Banksia</i> species and woodland of <i>Corymbia calophylla</i> with minor occurrences of <i>Corymbia haematoxylon</i> woodland of <i>Eucalyptus rudis</i> and <i>Melaleuca</i> species along creeks and on flood plains (Webb et al. 2016). • Yelverton Vegetation complex of southeast Whicher Scarp (314), which is described as woodland of <i>Allocasuarina fraseriana</i>, <i>Eucalyptus marginata</i> subsp. <i>marginata</i>, <i>Xylomelum occidentale</i> and <i>Banksia attenuata</i> on sandy slopes in the humid zone (Webb et al. 2016). <p>The mapped vegetation type (Abba vegetation complex) retains approximately 6.54 per cent of the original extent and mapped vegetation type Yelverton vegetation complex retains approximately 55.7 per cent of the original extent (Government of Western Australia, 2019a).</p>

Characteristic	Details
Vegetation condition	<p>Photographs supplied by the applicant (Rivenleigh, 2021) indicate the vegetation within the proposed clearing area is in Good to Very Good (Keighery, 1994) condition.</p> <p>The full Keighery (1994) condition rating scale is provided in Appendix D.</p> <p>Representative photos are available in Appendix E.</p>
Climate and landform	<p>The rainfall for the local area ranges from 850 to 1000 millimetres per year. Mean maximum temperatures in February range from 25 to 29 degrees Celsius. The landform is described as relatively flat (DPIRD, 2019).</p> <p>The application area falls within three different landforms (DPIRD, 2019).</p> <ul style="list-style-type: none"> • Yelverton deep sandy flats phase: level to gently undulating plains and sandy rises on the surface of the Yelverton Shelf. Slope gradients are mostly less than three per cent but occasionally range up to ten per cent. Some small areas of slight lateritic rises or knolls may be present. • Abba wet flats phase: low lying level plain and broad level depressions, slopes gradients generally less than one per cent, local relief less than one metre. Rock outcrop absent, very little micro relief. • Abba flats phase: level plain (occasionally gently undulating). Local relief is usually less than one meter. Slope gradients are mostly less than one per cent but occasionally range up to three per cent. Rock outcrop is absent, and there is very little micro relief.
Soil description	<p>Three different soil landscape mapping occur over the application area (DPIRD, 2019).</p> <ul style="list-style-type: none"> • Yelverton deep sandy flats phase: pale deep sands, gravelly pale deep sands, and yellow deep sands and sandy earths. • Abba wet flats phase: wet and semi-wet soils with pale sandy earths and pale deep sands with the dominant soil type being deep Busselton sand. • Abba flats phase: pale sandy earths, semi-wet soils and pale deep sands with some grey deep sandy duplexes
Land degradation risk	<p>The Department of Primary Industries and Regional Development (DPIRD), provides a series of soil degradation risk mapping at the systems level. The land degradation table B.5. below summaries the soil degradation risk within the application area. The risk of land degradation varies across the different soil phases within the application area. Majority of the application area is susceptible to subsurface acidification and have a minor wind and water erosion risk (DPIRD, 2019).</p>
Waterbodies	<p>The northern section of the application area is within the Coastal plain hydrological zone of Western Australia whilst the southern section of the application area is within the Donnybrook hydrological zone of Western Australia with the full extent of the application area located within the Caribunup River hydrographic catchment.</p> <p>The desktop assessment and aerial imagery indicated that no watercourses transect the area proposed to be cleared. There is a conservation category wetland located approximately 56 metres to the east of the application area.</p>
Hydrogeography	<p>The application area does not occur within a public drinking water source area (DWER-033) or area subject to the CAWS Act. The application area is not mapped within a surface water area proclaimed under the RiWI Act (DWER-037).</p> <p>The application area is located within the Busselton-Capel groundwater area proclaimed under the RIWI Act (DWER-034).</p> <p>Groundwater salinity level (Total Dissolved Solids) is mapped as less than 500 milligrams per litre (fresh water) (DWER-026).</p>
Flora	<p>Forty Seven (47) conservation significant flora taxa are known to occur within the local area which includes of 12 threatened flora species and 35 priority flora species. The closest record identified is <i>Calothamnus quadrifidus</i> subsp. <i>teretifolius</i>, one kilometre away from the application area and is a priority four species.</p>

Characteristic	Details
	The flora table B.3. below provides an analysis of the species identified within the local area.
Ecological communities	<p>The Priority one PEC, West Whicher Scarp <i>Banksia attenuata</i> woodland (Swan Coastal Plain centred woodlands of grey/white sands community B2) is mapped immediately adjacent to the application area. Priority three PEC (Federally listed TEC), Banksia Dominated Woodlands of the Swan Coastal Plain IBRA Region is also mapped immediately adjacent and surrounding the application area.</p> <p>Although conservation significant ecological communities are mapped surrounding the application area, no TEC or PEC are mapped over the application area. Based on the photographs provided by the applicant (Rivenleigh, 2021), it is unlikely the proposed clearing area comprise of species representative of a significant ecological communities.</p>
Fauna	<p>Twenty Five (25) conservation significant fauna species were identified within the local area including 14 bird species, four invertebrate species and seven mammal species.</p> <p>The application area is located within the distribution zone of the three vigilant black cockatoo species.</p> <p>The fauna table B.4. below provides an analysis of the species identified within the local area.</p>

B.2. Vegetation extent

	Pre-European extent (ha)	Current extent (ha)	Extent remaining (%)	Current extent in all DBCA managed land (ha)	Current proportion (%) of pre-European extent in all DBCA managed land
IBRA bioregion**					
Swan Coastal Plain	1,501,221.93	579,813.47	38.62	222,916.97	14.85
Vegetation association					
Beard vegetation association (Chapman – 1181)**	9,238	3,597.24	38.94	1,507.12	16.31
Vegetation Complex*					
Abba Complex (30)	50,892.78	3,326.20	6.54	183.20	0.36
Yelverton (314)	2,439.37	1,358.92	55.71	356.92	14.63
Local area					
10km radius	31,834.01	6,652.60	20.90	-	-

*Government of Western Australia (2019a)

**Government of Western Australia (2019b)

B.3. Flora analysis table

With consideration for the site characteristics set out above, relevant datasets (see Appendix F.1), impacts to the following conservation significant flora required further consideration.

Species name	Conservation status	Number of known records (total)	Distance of closest record to application area (km)	Suitable habitat features ? [Y/N]	Comment (Associated vegetation)
Threatened Species					
<i>Banksia nivea</i> subsp. <i>uliginosa</i>	T	8	5.94	N	Eucalyptus dominated woodland or low forest.
<i>Banksia squarrosa</i> subsp. <i>argillacea</i>	T	9	4.46	N	Tall shrubland of banksia, open marri-jarrah forest
<i>Caladenia busselliana</i>	T	4	4.62	N	Winter-wet swamps
<i>Caladenia procera</i>	T	8	4.57	N	Marri-jarrah or peppermint woodland
<i>Chamelaucium roycei</i>	T	2	1.93	N	Wetland and swamp vegetation
<i>Daviesia elongata</i>	T	13	3.68	N	Marri-jarrah, banksia woodland
<i>Grevillea brachystylis</i> subsp. <i>grandis</i>	T	13	6.36	N	Marri-jarrah woodland
<i>Verticordia plumosa</i> var. <i>ananeotes</i>	T	4	1.78	N	Shrubland with overstorey of marri with melaleuca.
<i>Caladenia excelsa</i>	T	1	8.17	N	Hilltops and slopes
<i>Caladenia viridescens</i>	T	2	9.34	N	Marri-peppermint woodlands
<i>Chamelaucium</i> sp. S coastal plain (R.D.Royce 4872) reclassified as <i>Chamelaucium roycei</i>	T	2	1.93	N	Wetlands and swamp vegetation
<i>Drakaea micrantha</i>	T	1	1.99	Y	Banksia, <i>Allocasuarina fraseriana</i> woodland or forests
Priority Species					
<i>Acacia flagelliformis</i>	4	6	1.13	N	Marri-jarrah banksia woodland
<i>Acacia inops</i>	3	4	7.82	N	Dense swampy vegetation
<i>Acacia lateritcola</i> var. <i>Glabrous</i> variant (B.R. Maslin 6765)	3	1	8.09	N	Marri-jarrah woodland
<i>Acacia semitrullata</i>	4	6	4.22	N	Sandplains and swampy areas
<i>Actinotus whicheranus</i>	2	1	6.04	N	Jarrah-marri and banksia woodland
<i>Andersonia ferricola</i>	1	6	5.96	N	Tall shrublands
<i>Andersonia</i> sp. <i>Echidna</i> (A.R. Annel ARA 5500)	2	1	9.74	N	Marri-jarrah woodland
<i>Boronia capitata</i> subsp. <i>gracilis</i>	3	6	3.21	N	Low woodland of Banksia spp.
<i>Calothamnus lateralis</i> var. <i>crassus</i>	3	3	5.93	N	Peaty sand in swamps
<i>Calothamnus quadrifidus</i> subsp. <i>teretifolius</i>	4	10	1.00	N	Woodland or shrubland of jarrah-marri
<i>Chordifex gracilior</i>	3	2	1.24	N	Low eucalyptus woodland
<i>Cyathochaeta teretifolia</i>	3	4	5.24	N	Swamp edges with melaleuca
<i>Gahnia sclerioides</i>	4	2	9.23	N	Low woodland or mixed shrubland
<i>Gonocarpus pusillus</i>	4	1	9.74	N	Wetlands, seasonally damp plain
<i>Grevillea brachystylis</i> subsp. <i>brachystylis</i>	3	7	6.10	N	Marri-jarrah Forest
<i>Grevillea brachystylis</i> subsp. <i>Yelverton</i> (A. Webb AW09122)	2	3	9.14	N	Marri low open woodland
<i>Hakea oldfieldii</i>	3	13	1.83	N	Marri-jarrah woodland
<i>Isopogon formosus</i> subsp. <i>dasylepis</i>	3	3	3.77	N	Eucalyptus woodland with banksia
<i>Johnsonia inconspicua</i>	3	12	2.15	N	Marri-jarrah open woodland
<i>Lasiopetalum laxiflorum</i>	3	3	3.37	N	Marri-jarrah open woodland
<i>Lepyrodia heleocharoides</i>	3	6	3.81	N	Usually on borders of swamp
<i>Leucopogon</i> sp. <i>Busselton</i> (D. Cooper 243)	2	1	9.60	N	Jarrah-marri woodland
<i>Loxocarya magna</i>	3	6	3.46	N	Marri-melaleuca woodland
<i>Melaleuca incana</i> subsp. <i>Gingilup</i> (N. Gibson & M. Lyons 593)	2	1	8.23	N	Swamps – riparian vegetation
<i>Olearia strigosa</i>	3	1	3.48	N	Eucalyptus woodland

Species name	Conservation status	Number of known records (total)	Distance of closest record to application area (km)	Suitable habitat features ? [Y/N]	Comment (Associated vegetation)
<i>Pimelea ciliata</i> subsp. <i>longituba</i>	3	2	3.21	N	Jarrah or eucalyptus woodland over peppermint
<i>Pultenaea pinifolia</i>	3	6	7.83	N	Swamp or wetland vegetation
<i>Schoenus benthamii</i>	3	1	9.32	N	Swampy vegetation or seasonal wetlands
<i>Schoenus</i> sp. Jindong (R.D. Royce 2485)	1	1	3.21	N	Open eucalypt woodland
<i>Stylidium leeuwinense</i>	4	1	1.24	N	Winter-wet habitat and depressions
<i>Synaphea decumbens</i>	3	2	5.95	N	Marri-jarrah Forest
<i>Synaphea hians</i>	3	2	5.24	N	Marri-jarrah or melaleuca woodland
<i>Synaphea petiolaris</i> subsp. <i>simplex</i>	3	5	6.17	N	Marri-jarrah and melaleuca woodland
<i>Thysanotus glaucus</i>	4	2	7.70	N	Low open woodland dominated by banksia sp.
<i>Verticordia lehmannii</i>	4	2	3.48	N	Swampy heath vegetation

B.4. Fauna analysis table

With consideration for the site characteristics set out above, relevant datasets (see Appendix F.1), impacts to the following conservation significant fauna required further consideration.

Species scientific name	Species Common name	Conservation status	Number of known records	Year of most recent record	Distance of closest record to application area (km)	Suitable habitat features? [Y/N]
BIRD						
<i>Calidris acuminata</i>	Sharp-tailed sandpiper	MI	1	1978	6.13	N
<i>Calidris ruficollis</i>	Red-necked stint	MI	1	1981	9.32	N
<i>Calyptorhynchus banksii naso</i>	forest red-tailed black cockatoo	VU	10	2018	1.88	N – understorey clearing only
<i>Calyptorhynchus baudinii</i>	Baudin's cockatoo	EN	12	2020	2.46	N - understorey clearing only
<i>Calyptorhynchus latirostris</i>	Carnaby's cockatoo	EN	9	2018	1.40	N - understorey clearing only
<i>Calyptorhynchus</i> sp. 'white-tailed black cockatoo'	White-tailed black cockatoo	EN	35	2020	2.61	N - understorey clearing only
<i>Diomedea exulans</i>	Wandering albatross	VU	1	1978	9.32	N
<i>Falco peregrinus</i>	Peregrine falcon	OS	2	2018	2.67	N
<i>Hydroprogne caspia</i>	Caspian Tern	MI	1	1979	9.32	N
<i>Macronectes halli</i>	Northern giant petrel	MI	1	1977	9.32	N
<i>Sterna hirundo</i>	Common tern	MI	1	1978	9.32	N
<i>Thalassarche chlororhynchos</i>	Atlantic, yellow-nosed albatross	VU	1	1981	9.32	N
<i>Thalasseus bergii</i>	Crested tern	MI	5	1981	9.32	N
<i>Thinornis rubricollis</i>	Hooded plover, hooded dotterel	P4	2	1981	9.32	N
INVERTEBRATES						

Species scientific name	Species Common name	Conservation status	Number of known records	Year of most recent record	Distance of closest record to application area (km)	Suitable habitat features? [Y/N]
<i>Engaewa pseudoreducta</i>	Margaret River burrowing crayfish	CR	10	2018	1.31	N
<i>Engaewa reducta</i>	Dunsborough burrowing crayfish	EN	48	2018	0.42	N
<i>Pachysaga strobila</i>	Vasse pachysaga (Busselton-Donnybrook)	P1	1	1982	9.64	N
<i>Westralunio carteri</i>	Carter's freshwater mussel	VU	4	2020	0.46	N
MAMMALS						
<i>Bettongia penicillata ogilbyi</i>	woylie, brush-tailed bettong	CR	2	2011	1.75	N
<i>Dasyurus geoffroii</i>	chuditch, western quoll	VU	1	1986	8.07	N
<i>Hydromys chrysogaster</i>	Water-rat, rakali	P4	9	2018	0.46	N
<i>Isoodon fusciventer</i>	quenda, southwestern brown bandicoot	P4	15	2018	0.46	N
<i>Notamacropus irma</i>	Western brush wallaby	P4	3	1969	8.73	N
<i>Phascogale tapoatafa wambenger</i>	South-western brush-tailed phascogale, wambenger	CD	35	2020	4.13	N

B.5. Land degradation risk table

Risk categories	Risk level	Description
214WsYLd – Yelverton deep sandy flats Phase		
Wind erosion	H2	86% of map unit has a high to extreme hazard
Water erosion	L1	0% of the map unit has a moderate to high hazard
Salinity	L1	0% of map unit has a moderate hazard
Subsurface Acidification	H2	99% of map unit has a high susceptibility
Flood risk	L1	0% of the map unit has a moderate to high hazard
Water logging	M1	19% of map unit has a moderate to very high risk
Phosphorus export risk	H1	59% of map unit has a high to extreme hazard
213AbABw – Abba wet flats Phase		
Wind erosion	M1	15% of map unit has a high to extreme hazard
Water erosion	L1	0% of map unit has a very high to extreme hazard
Salinity	L2	8% of map unit has a moderate hazard
Subsurface Acidification	H2	100% of map unit has a high susceptibility
Flood risk	L1	0% of the map unit has a moderate to high hazard
Water logging	H2	82% of map unit has a moderate to very high risk
Phosphorus export risk	M1	29% of map unit has a high to extreme hazard
213AbAB1 – Abba Flats Phase		
Wind erosion	M1	27% of map unit has a high to extreme hazard
Water erosion	L1	0% of map unit has a very high to extreme hazard
Salinity	L1	0% of map unit has a moderate hazard
Subsurface Acidification	H2	100% of map unit has a high susceptibility
Flood risk	L1	0% of the map unit has a moderate to high hazard
Water logging	H1	62% of map unit has a moderate to very high risk
Phosphorus export risk	M1	29% of map unit has a high to extreme hazard

Appendix C. Assessment against the clearing principles

Assessment against the clearing principles	Variance level	Is further consideration required?
Environmental value: biological values		
<p><u>Principle (a):</u> <i>“Native vegetation should not be cleared if it comprises a high level of biodiversity.”</i></p> <p><u>Assessment:</u></p> <p>The area proposed to be cleared is unlikely to have a significant impact on conservation significant flora, fauna and significant ecological communities which were identified within the ten-kilometre radius local area. The proposed clearing area may provide suitable habitat for <i>Drakaea micrantha</i> flora species but given the size and nature of the proposed clearing the risk of impact is low.</p>	May be at variance	Yes <i>Refer to Section 3.2.1, above.</i>
<p><u>Principle (b):</u> <i>“Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna.”</i></p> <p><u>Assessment:</u></p> <p>The area proposed to be cleared does not contain foraging, roosting, breeding and significant habitat for conservation significant fauna identified from the local area. The proposed clearing will be limited to impacting a very small amount of understorey vegetation for the purpose of placing a boring machine in two locations within the larger application area footprint. Although the proposed application area is located within the black cockatoo distribution zone and records of black cockatoos are identified within the local area, the proposed clearing will not involve clearing vegetation which are habitat for black cockatoos. The mammal fauna and the avian species identified from the local area are highly mobile and able to move into adjacent vegetation if present during the proposed work. The application area does not provide suitable habitat for the invertebrate fauna identified from the local area.</p>	Not likely to be at variance	No
<p><u>Principle (c):</u> <i>“Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora.”</i></p> <p><u>Assessment:</u></p> <p>The area proposed to be cleared is likely to contain suitable habitat for <i>Drakaea micrantha</i> listed under the BC Act. Given the very small area of clearing and the nature of the proposed clearing, the risk of impact is low.</p> <p>No other conservation significant flora species listed under the BC Act are likely to occur over the application area due to the absence of suitable habitat.</p>	May be at variance	Yes <i>Refer to Section 3.2.1, above.</i>
<p><u>Principle (d):</u> <i>“Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a threatened ecological community.”</i></p> <p><u>Assessment:</u></p> <p>The application area is not mapped over a TEC nor is the proposed clearing likelihood to contain species that indicate a TEC.</p>	Not likely to be at variance	No
Environmental value: significant remnant vegetation and conservation areas		
<p><u>Principle (e):</u> <i>“Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.”</i></p> <p><u>Assessment:</u></p> <p>The extent of native vegetation in the local area is inconsistent with the national objectives and targets for biodiversity conservation in Australia. The extent of the Abba vegetation complex is also inconsistent with less than 30 per cent</p>	May be at variance	Yes <i>Refer to Section 3.2.2, above.</i>

Assessment against the clearing principles	Variance level	Is further consideration required?
remaining (Commonwealth of Australia, 2001). The vegetation proposed to be cleared is not considered to be part of a significant ecological linkage in the local area.		
<p><u>Principle (h):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.”</i></p> <p><u>Assessment:</u></p> <p>Given the distance to the nearest conservation area, the proposed clearing is not likely to have an impact on the environmental values of nearby conservation areas.</p>	Not at variance	No
Environmental value: land and water resources		
<p><u>Principle (f):</u> <i>“Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.”</i></p> <p><u>Assessment:</u></p> <p>Given no water courses or wetlands are recorded within the application area, the proposed clearing is unlikely to impact on- or off-site hydrology and water quality.</p>	Not at variance	No
<p><u>Principle (g):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.”</i></p> <p><u>Assessment:</u></p> <p>The mapped soils are not susceptible to nutrient export and salinity. Noting the extent, purpose of the proposed clearing and the location of the application area, the proposed clearing is not likely to have an appreciable impact on land degradation. There is a minor risk of wind and water erosion of the mapped soils. Given the purpose of the proposal is for the positioning of a boring machine to provide electricity, the proposed clearing will not intensify wind and water erosion.</p>	Not at variance	No
<p><u>Principle (i):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.”</i></p> <p><u>Assessment:</u></p> <p>Given no water courses, wetlands or Public Drinking Water Sources Areas are recorded within the application area, the proposed clearing is unlikely to impact surface or ground water quality.</p>	Not at variance	No
<p><u>Principle (j):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.”</i></p> <p><u>Assessment:</u></p> <p>The mapped soils and topographic contours in the surrounding area do not indicate the proposed clearing is likely to contribute to increased incidence or intensity of flooding.</p> <p>Given no water courses and wetlands are recorded within the application area, the proposed clearing is unlikely to contribute to waterlogging.</p>	Not at variance	No

Appendix D. Vegetation condition rating scale

Vegetation condition is a rating given to a defined area of vegetation to categorise and rank disturbance related to human activities. The rating refers to the degree of change in the vegetation structure, density and species present in relation to undisturbed vegetation of the same type. The degree of disturbance impacts upon the vegetation's ability to regenerate. Disturbance at a site can be a cumulative effect from a number of interacting disturbance types.

Considering its location, the scale below was used to measure the condition of the vegetation proposed to be cleared. This scale has been extracted from Keighery, B.J. (1994) *Bushland Plant Survey: A Guide to Plant Community Survey for the Community*. Wildflower Society of WA (Inc). Nedlands, Western Australia.

Measuring vegetation condition for the South West and Interzone Botanical Province (Keighery, 1994)

Condition	Description
Pristine	Pristine or nearly so, no obvious signs of disturbance.
Excellent	Vegetation structure intact, with disturbance affecting individual species; weeds are non-aggressive species.
Very good	Vegetation structure altered, with obvious signs of disturbance. For example, disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging and/or grazing.
Good	Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. For example, disturbance to vegetation structure caused by very frequent fires, the presence of some very aggressive weeds at high density, partial clearing, dieback and/or grazing.
Degraded	Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. For example, disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds, partial clearing, dieback and/or grazing.
Completely degraded	The structure of the vegetation is no longer intact and the area is completely or almost completely without native species. These areas are often described as 'parkland cleared' with the flora comprising weed or crop species with isolated native trees or shrubs.

Appendix E. Photographs of the vegetation and additional information (Rivenleigh Pty Ltd, 2021)



Figure 2: Representation of the locations where the boring machine is proposed to be located as submitted by Western Power on behalf of Rivenleigh Pty Ltd to DWER.



Appendix F. Sources of information

F.1. GIS databases

Publicly available GIS Databases used (sourced from www.data.wa.gov.au):

- 10 Metre Contours (DPIRD-073)
- Aboriginal Heritage Places (DPLH-001)
- Aboriginal Heritage Places (DPLH-001)
- Cadastre (LGATE-218)
- Cadastre Address (LGATE-002)
- Contours (DPIRD-073)
- DBCA – Lands of Interest (DBCA-012)
- DBCA Legislated Lands and Waters (DBCA-011)
- Directory of Important Wetlands in Australia – Western Australia (DBCA-045)
- Environmentally Sensitive Areas (DWER-046)
- Flood Risk (DPIRD-007)
- Groundwater Salinity Statewide (DWER-026)
- Hydrography – Inland Waters – Waterlines
- Hydrological Zones of Western Australia (DPIRD-069)
- IBRA Vegetation Statistics
- Imagery
- Local Planning Scheme – Zones and Reserves (DPLH-071)
- Native Title (ILUA) (LGATE-067)
- Offsets Register – Offsets (DWER-078)
- Pre-European Vegetation Statistics
- Public Drinking Water Source Areas (DWER-033)
- Ramsar Sites (DBCA-010)
- Regional Parks (DBCA-026)
- Remnant Vegetation, All Areas
- RIWI Act, Groundwater Areas (DWER-034)
- RIWI Act, Surface Water Areas and Irrigation Districts (DWER-037)
- Soil Landscape Land Quality – Flood Risk (DPIRD-007)
- Soil Landscape Land Quality – Phosphorus Export Risk (DPIRD-010)
- Soil Landscape Land Quality – Subsurface Acidification Risk (DPIRD-011)
- Soil Landscape Land Quality – Water Erosion Risk (DPIRD-013)
- Soil Landscape Land Quality – Water Repellence Risk (DPIRD-014)
- Soil Landscape Land Quality – Waterlogging Risk (DPIRD-015)
- Soil Landscape Land Quality – Wind Erosion Risk (DPIRD-016)
- Soil Landscape Mapping – Best Available
- Soil Landscape Mapping – Systems
- Wheatbelt Wetlands Stage 1 (DBCA-021)

Restricted GIS Databases used:

- ICMS (Incident Complaints Management System) – Points and Polygons
- Threatened Flora (TPFL)
- Threatened Flora (WAHerb)
- Threatened Fauna
- Threatened Ecological Communities and Priority Ecological Communities
- Threatened Ecological Communities and Priority Ecological Communities (Buffers)

F.2. References

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